Form PTO-1390 (Rev. 5-93)	U.S. Department of Commerce Patent and Trademark Office	Attorney's Docket Number CBZ-377
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		U.S. Application No. (if known - see 37 CFR 1.5) (not issued) 09/509297

International Application No. PCT/EP98/06022	International Filing Date 22 September 1998	Priority Date Claimed 22 September 1997

Title of Invention
AUDIO PLAYER AND A METHOD FOR CONTROLLING AUDIO DATA BY THE AUDIO PLAYER

Applicant(s) for DO/EO/US
Erich BOHM

Applicant herewith submits to the U.S. Designated/Elected Office (DO/EO/US) the following items and other information:

__X__ 1. This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.

_____ 2. This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.

__X__ 3. This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).

__X__ 4. A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

__X__ 5. A copy of the International Application as filed (35 U.S.C. 371(c)(2))

     _____ a. is transmitted herewith (required only if not transmitted by the International Bureau).
     __X__ b. has been transmitted by the International Bureau.
     _____ c. is not required, as the application was filed in the U.S. Receiving Office (RO/US).

__X__ 6. A translation of the International Application into English (35 U.S.C. 371(c)(2)).

__X__ 7. Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))

     _____ a. are transmitted herewith (required only if not transmitted by the International Bureau).
     _____ b. have been transmitted by the International Bureau.
     _____ c. have not been made; however, the time limit for making such amendments has NOT expired.
     __X__ d. have not been made and will not be made.

_____ 8. A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

_____ 9. An oath or declaration of the inventor (35 U.S.C. 371(c)(4)).

_____ 10. A translation of the Annexes to the International Preliminary Examination Report under PCT Article 36 (35 USC 371(c)(5)).

Items 11. to 16. below concern other document(s) or information included:

_____ 11. An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

_____ 12. An Assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

__X__ 13. A FIRST preliminary amendment.

_____ A SECOND or SUBSEQUENT preliminary amendment.

_____ 14. A substitute specification.

_____ 15. A change of power of attorney and/or address letter.

__X__ 16. Other items or information:

     Translator's Affidavit
     Translation of PCT Provisional International Search Report

09/509297

APPLICATION NO. (If known, see 37 CFR 1.5) (not issued)	INTERNATIONAL APPLICATION NO. PCT/EP98/06022	ATTORNEY'S DOCKET NO. CBZ-377

X 17. The following fees are submitted:	CALCULATIONS	PTO USE ONLY

BASIC NATIONAL FEE (37 CFR 1.492(a)(1) - (5)):

Search Report has been prepared by the EPO or JPO $840.00

International preliminary examination fee paid to USPTO (37 CFR 1.482). . $670.00

No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2)) $690.00

Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO $970.00

International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4) . . . .$ 96.00

ENTER APPROPRIATE AMOUNT =	$ 840.00	
*Surcharge of $130.00 for furnishing the National Fee or oath or declaration later than ___ 20 _X_ 30 mos. from the earliest claimed priority date (37 CFR 1.492(e)).	$ 130.00	

Claims	Number Filed	Number Extra	Rate		
TOTAL CLAIMS	4 - 20 =		X $18.00		
INDEPENDENT CLAIMS	2 - 3 =		X $78.00		
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ $260.00		

Since Notice of Missing Parts set an _original_ due date of _____, Petition is hereby made for an extension to cover the date this response is filed for which the requisite fee is enclosed (1 month $110; 2 months $370; 3 months; $870)	$	
TOTAL OF ABOVE CALCULATIONS =	$ 970.00	
Reduction by 1/2 for filing by small entity, if applicable. Verified Small Entity statement must also be filed. (Note 37 CFR 1.9, 1.27, 1.28).	$	
SUBTOTAL =	$ 970.00	
Processing fee of $130.00 for furnishing the English translation later than ___ 20 ___ 30 mos. from the earliest claimed priority date (37 CFR 1.492(f)). +	$	
TOTAL NATIONAL FEE =	$ 970.00	
Fee for recording the enclosed Assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). $40.00 per property +	$	
TOTAL FEES ENCLOSED =	$ 970.00	
	Amount to be: refunded	$
	charged	$

X   A. A check in the amount of $ 970.00   to cover the above fees is enclosed.

_____   B. Please charge my Deposit Account No. 04-1403 in the amount of $_____ to cover the above fees. A duplicate copy of this sheet is enclosed.

X   C. The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 04-1403 . A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.37(a) or (b)) must be filed and granted to restore the application to pending status.

EXPRESS MAIL MAILING CERTIFICATE

Express Mail - Mailing Label Number   EL471678913US

Date of Deposit   MARCH 22, 2000

I hereby certify that this paper and any referenced attachment and/or fee are being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231

SIGNATURE

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PATENT

ATTORNEY DOCKET NO.: CBZ-377

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of ERICH BOHM	)) Examiner: (Unknown)
	)
Serial No.: (not issued)	) Art Unit: (Unknown)
	)
Filed: (herewith)	)
	)
For: AUDIO PLAYER AND A METHOD FOR CONTROLLING AUDIO DATA BY THE AUDIO PLAYER	)))

Assistant Commissioner
 for Patents
Washington, DC 20231

PRELIMINARY AMENDMENT

Dear Sir:

        Please enter the following first preliminary amendment in the above-referenced application filed herewith.

IN THE SPECIFICATION:

        On page line, line 13, please delete the following:

"Audio data compressed by the microprocessor of the MM card from the memory of the MM card is transported directly"

and replace with

--Compressed audio data is transported by the microprocessor of the MM card from the memory of the MM card directly--.

IN THE CLAIMS:
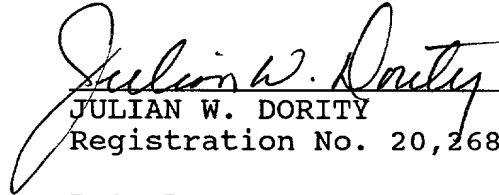
        Please cancel claims 3-9 and 12-20.

REMARKS

        By way of the above first preliminary amendment, applicant has canceled all but independent claims 1 and 10 and dependent

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claims 2 and 11 in the above application for the purpose of entering the national phase in the United States.

Respectfully submitted,

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TRANSLATOR'S VERIFICATION

I, Philip M. Morris, a translator residing at P.O. Box 670907, Dallas, Texas 75367 verify that I know well both the German and the English languages, that I have prepared the attached English translation of an International Patent Application in the German language entitled "Audio Player and Method for Controlling Audio Data Using Said Audio Player" identified by International Application No. PCT/EP98/06022 and filed on September 22, 1998 and that the attached English translation of this document is a true and correct translation of the documents attached thereto to the best of my knowledge and belief.

I further declare that all statements made of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 USC 1001, and that such false statements may jeopardize the validity of this document.

Date: February 29, 2000   By: _Philip M. Morris_

(54) Title: AUDIO PLAYER AND METHOD FOR CONTROLLING AUDIO DATA USING SAID AUDIO PLAYER

(57) Abstract

　　　　The invention is relative to an audio player with an interchangeable data carrier for audio data. At least one microcontroller (8) with a connection to its own peripheral keyboard (10) is provided in the audio player. Said microcontroller (8) has a data connection to a decompression circuit (4) via the transmission path (VOV1) and a data connection (VOV2) to an MM card (3). The MM card can be inserted into a slot (2) of the player (1) and has a data connection (V2V1) to the decompression circuit (4) whose output runs to a D/A converter (5). The output of the D/A converter (5) is connected to a playback unit (7). According to the method for controlling audio data, the audio data for the audio player (1) is delivered by said audio player (1) by means of interchangeable data carriers or via a serial interface (12). The delivered audio data is compressed and then transported with a control operation of the microcontroller (8) of the audio player (1) from a memory of a multimedia PC (11) into a flash memory of the MM card (3) where it is stored in the compressed state and/or the compressed audio data is transported with a control operation of the microprocessor of the MM card (3) from the flash memory to a decompression circuit where it is then decompressed and then passed on to a playback unit (7) via the D/A converter or the compressed audio data is transported from a memory of the multimedia PC (11) to the decompression circuit (4) where it is decompressed and then passed to the playback unit (7) via the D/A converter.

Audio Player and a Method for Controlling Audio Data by the Audio Player

The invention is relative to an audio player with an interchangeable data carrier and an associated method for controlling audio data by the audio player.

The personal computer (PC) or a device that can be coupled to it has become known as an electronic device capable of multimedia. The term multimedia denotes the cooperation of graphics, sounds and/or text within an application on the computer. Even the output of sound files itself in an application is to be understood under the concept of multimedia.

The development of the multimedia PC made available a computer with which the cooperation of multimedia components was possible. The minimum standard that a computer must meet for multimedia application was defined by the MPC standard, currently MPC 2.

The multimedia PC can be coupled to audio and/or video devices. Such a system, consisting for example of multimedia PC and audio player, has extensive hardware and requires a large footprint. Especially in the case of a music player being used as an audio device the further use of the CD-ROM and of a CD-ROM drive is an obstacle to a previous [sic] reduction in size of the player. The current development of a DVD (Digital Versatile Disk) as data carrier for audio players does bring about a new dimension in storage capacity; however, the use of a drive in known audio players is retained. The disadvantages of mechanically movable components in the

drive and their susceptibility to trouble remain. The CD-ROM is, just as a DVD, an interchangeable data carrier for an audio player. In both instances a drive is always necessary.

EP 0786774 A2 teaches an audio playback and recording device that retrieves data, for example for the playback of music, from a transmitting station and stores it in the device. To this end a hard disk for storing the data is permanently integrated into the device. The hard disk is a disk with drive which disk rotates at a high speed and is 1.8 inches in size in the exemplary embodiment of EP 0786774 A2. The external form of the hard disk component can resemble a card (72) that is permanently integrated in the device. The data is filed on the hard disk up to a play time of approximately 30 minutes and retrieved as needed. If the user wants to be able to retrieve other music selections he must delete the previous data on the hard disk and re-record with data from the transmitting station. The development of larger hard disks up to a capacity of 1 GB which can be permanently integrated in the device (column 10) is viewed as progress to be achieved in the future and as a future goal for the further development of the device of EP 0786774 A2. However, this has the disadvantage that even in this instance the capacity of the hard disk would be limited and would have to be at least partially deleted again. Moreover, such cards are also particularly sensitive to shocks. In addition, EP 0786774 A2 suggests cards (74) for expanded functions such as, for example, for using the device as a fax machine or a navigating device. However, this perpetuates the disadvantages of the

integrated hard disk. Moreover, the cards (74) with the PCMCIA standard are still very large and awkward.

The invention has the problem of developing an audio player which can be operated independently, eliminates an integrated hard disk, a CD-ROM drive or a similar drive operating with movable parts but in which audio player the playback of sounds in hi-fi quality is made possible and in which the storage medium is small and which makes possible a plurality of applications.

A further problem in an advantageous embodiment is to make it possible for the audio player to be selectively operated either independently or coupled to a data source, particularly to a computer or a multimedia PC, a CD player or another playback device.

A further problem is to avoid the above-mentioned disadvantages.

The problems are solved in accordance with the features of claim 1 and the features of claim 10.

It is advantageous if the audio player (player) has a slot for a multimedia card (called MM cards in the following). The MM card contains at least one microprocessor for data control and contains a memory, in particular a flash memory. Additional or alternative other memories such as ROM and/or RAM components are also possible but not necessarily required. If the audio player has several slots for MM cards the storage capacity is further raised since data information can be recalled either simultaneously or successively.

The previously known cards are PC cards according to the PCMCIA standard. The novel MM card is used as an interchangeable data carrier for the audio player and replaces the CD-ROM with the CD-ROM drive or any other permanently integrated hard disk in the device. This achieves a great advantage because mechanically stressed parts of the drive can be eliminated in a general fashion. This reduces the total sensitivity of the player to shocks. The MM card is also significantly smaller in its dimensions and thus more space-saving than a PC card according to the PCMCIA standard. However, it is also basically possible to retain the dimensions of a PCMCIA in that several MM cards are placed on a carrier with such dimensions or the active carrier [the carrier for legends] has these dimensions.

The MM card is a data carrier for at least audio data. Audio data can be converted into sounds such as music or language. In a special embodiment of the player it can be additionally equipped with a signal processor that realizes an algorithm for converting preferably compressed text data into audio data. This signal processor can be controlled by the microcontroller of the audio player. The playback of this audio data is performed as language. This makes it possible to convert text data that is also stored on the MM card into audio data and finely into language. This corresponds to a "speaking book". This cooperation between text data and audio data via the card as data carrier results in the formation of the concept of the MM card.

The player can be operated independently or preferably in conjunction with a multimedia PC.

The data connection between the data source, preferably a computer or a multimedia PC, and audio player takes place via an interface, in particular a serial interface. This interface could be a serial interface according to the RS 232 standard, preferably according to the USB standard. USB denotes the Universal Serial Bus, which makes possible a genuine hot plug-and-play. The multimedia PC communicates via the serial interface with the microcontroller of the audio player. In order to fulfill control functions the microcontroller also comprises ROM and RAM components. A data connection runs from the microcontroller to the slot for the MM card. When the MM card is introduced into the slot there is a data connection to decompression circuit. This connection comprises a high-speed interface that makes high data transfer rates possible. The decompression circuit has at least one signal processor. There is a connection to a D/A converter from this circuit for the decompression of the audio data. The connection runs further from the D/A converter to a playback unit comprising at least one amplifier and a loudspeaker unit or an earphone unit.

The player makes it possible in an advantageous manner to store compressed audio data from the memory of the multimedia PC on the MM card of the player. This is made possible by a download from the memory of the data source, controlled by the microcontroller of the player. The microcontroller also comprises data connections to a keyboard and

optionally to a display. The keyboard comprises at least known function keys of a music player.

The audio data is stored on the MM card in a highly compressed manner. The data reduction corresponds at least to the method according to MPEG II layer 3. The higher the compression rate of the audio data, the longer the playing time is. The more information is stored, the higher the playback quality is. Audio data represents sounds such as music or language.

The compressed audio data can be transferred to the decompression circuit for decompression during the cooperation between the microcontroller and the microprocessor of the MM card (or an ASIC [defined below as "user (application) circuit"] circuit via the indicated connection. This process can be initiated by activating the "Play" key on the keyboard of the player. The compressed audio data is read out of the flash memory of the MM card thereby.

The signal processor of the decompression circuit makes a high processing speed possible which is supported by the high-speed interface. The decompression circuit feeds the D/A converter via a connection. The signals formed are supplied from the D/A converter to a playback unit. The playback unit comprises at least one amplifier and a loudspeaker unit and makes possible the playback of sounds during play.

The method for controlling audio data can

- Transfer audio data from a data source onto an MM card as data carrier in order to play this data from there by the audio player; in a further development even text data can be transferred to and stored on the MM card and be converted there into audio data, and/or

- Play audio data already stored in a compressed manner in an MM card inserted in the slot for playback by the audio player, and/or

- Play audio data from the data source directly in the audio player.

The audio data for the audio player is supplied by means of an interchangeable data carrier or, in particular, via a serial interface. The supplied audio data is already compressed or becomes compressed and is transported by a microcontroller of the audio player as compressed audio data from a memory of a data source into a memory of the MM card, where it is stored. Audio data compressed by the microprocessor of the MM card from the memory of the MM card is transported directly or via the microcontroller to a decompression circuit with a control, decompressed there and then supplied via a D/A converter to a playback unit. Compressed audio data is transported from a memory of the data source to the decompression circuit, decompressed there and then supplied via the D/A converter to the playback unit.

The audio player with the method for controlling audio data makes possible in an advantageous manner the playback of sound in hi-fi quality.

The compressed audio data can be selectively transmitted at various data transfer rates to the decompression circuit. This makes it possible to achieve different playback qualities and also different amounts of memory. It has proven to be advantageous if the data transfer rate is at least 92 kbits/s.

A random (optional) access to the memory of the MM card is made possible in an advantageous manner via a keyboard of the microcontroller in which case the transmission of audio data is interrupted in particular upon the initiation of a "Forward" or "Back" procedure with the keyboard.

If the interruption of the data transfer is marked in the memory by setting a data marker (pointer, indicator), then the position at which the interruption took place can be found again in a rapid and simple manner.

It is advantageous if a signal processor is controlled in such a manner by program data from the MM card by the microcontroller of the audio player that text data stored on the MM card is converted into audio data.

A further advantageous development of the invention consists in that a signal processor is controlled in such a manner by program data from the MM card by the microcontroller of the audio player that text data stored on the MM card is not converted into audio data but rather is reproduced on a display via the playback unit. This makes the audio player in accordance with the invention even more versatile.

An exemplary embodiment of the invention is described in the following.

Figure 1 shows the most important functional groups of an audio player and their data connections.

Figure 1 is limited to the most important functional groups essential for an understanding of the operation of the invention. It can be recognized that audio player 1 comprises slot 2 for an MM card 3. MM card 3 replaces the CD-ROM with CD-ROM drive or hard disk which were previously customary in audio players.

In order to make possible a cooperation with the player a microprocessor (or an ASIC, that is, a user [application] circuit) for control and a memory, in particular a flash memory, are integrated on the MM card. Resources for driving the flash memory are saved in audio player 1 by the integrated microprocessor. The flash memory can be written and erased electronically. It comprises, for example, the storage capacity of 4 MB on the MM card. This exceeds the CD-ROM memory of previous audio players.

The MM card can be manually exchanged, that is, replaced by virtue of slot 2. Card 3 and slot 2 have the necessary contacts, which are closed when card 3 is inserted. In comparison to any drive, the MM card 3 is not sensitive to shocks and is resistant to its environment. This data carrier (MM card) is significantly smaller than a credit card and thus smaller than previously known PC cards in accordance with the PCMCIA standard.

However, the MM card can also be designed according to the geometric dimensions of the PCMCIA standard.

Audio player 1 has, for example, an RS 232 interface 12 (a USB interface would also be possible, for example) in order to make possible a coupling to a data source that is designated in the following as a multimedia PC 11. This interface is not obligatorily required but is logical if cooperation with a data source is required. This is described elsewhere.

Audio player 1 has at least one microcontroller 8. This microcontroller 8 is connected via data and control lines to RS 232 interface 12 which, on the other hand, has a connection to multimedia PC 11. There is another connection with transmission path VOV 1 to compression circuit 4. A transmission path between the points VO, V1, V2 has a purely symbolic character and is intended to represent necessary possibilities of connection for the transport of audio data and control signals with only a minimum of sketching.

It can also be provided in a special embodiment that data is read out of the MM card 3 via the path V2VO and controlled in microcontroller 8. The control can concern, for example, the right to play, right to use or copy protection. After a positive control the data is then forwarded to decompression circuit 4 via path VOV1.

Furthermore, microcontroller 8 comprises a connection to keyboard 10 and, optionally, display 9. Display 9 could be eliminated for economic reasons. The keyboard comprises at least the keys for known basic functions

of a music player. Furthermore, there are control and data connections from microcontroller 8 via transmission path VOV2 to slot 2 and thus to the microprocessor and to the flash, RAM or ROM memories of MM card 3.

There is a connection via slot 2 to current supply 13, which supplies the integrated components on MM card 3 with energy. On the other hand there is a data connection with transmission path V2V1 from flash memory card 3 to decompression circuit 4. This circuit assumes the function of a decoder for decompressing audio data. It is therefore provided with at least one signal processor. The output of decompression circuit 4 is connected via connection lines to D/A converter 5 that can advantageously be a stereo D/A converter. The output of the D/A converter is connected to playback unit 7. The latter comprises at least one amplifier 6 and, after its output, a loudspeaker unit, preferably stereo loudspeaker 7.1, 7.2. Alternatively, earphones or both can be used for the loudspeaker unit. The playback unit is capable of producing sounds like language or music.

The method for controlling audio data by audio player 1 utilizes microcontroller 8. If a multimedia PC 11 is connected via RS 232 interface 12 microcontroller 8 has access to the memory of multimedia player PC 11. The method operates with audio data compressed according to the MPEG II layer 3 standard. A powerful compression method is particularly advantageous since enormous amounts of data must be processed during the processing of audio data.

The compressed audio data from multimedia PC 11 can be transmitted via transmission path VOV2 into the memory of the MM card 3 by a download controlled by microprocessor 8 in cooperation with multimedia PC 11 and stored there. If compressed text data is being transmitted, it can also be stored on the MM card. Before being re-transmitted, this text data must be converted by the signal processor of the MM card into audio data which is then available for further processing. The algorithm of the signal processor on the MM card can also be designed in such a manner that it optionally suppresses a conversion of the text data into audio data and brings the playback of the decompressed text data onto a screen display so that a page-by-page presentation of the text becomes possible (not shown in figure 1).

Alternatively, a transfer of data to decompression circuit 4 can take place from this or another MM card provided with other audio data stored in a compressed manner. This process can be initiated, for example, by actuating the "Play" key on keyboard 10. This causes the compressed audio data to be read out of the memory of the MM card 3 and transmitted to the compression circuit. Transmission path V2V1 from MM card 3 to compression circuit 4 is supported by a high-speed interface.

This data stream can be transmitted at different data-transfer rates, approximately 92 kbit/s, preferably approximately 128 kbit/s. Compression circuit 4 is a decoder for decompressing the audio data.

There is also the possibility that compressed audio data is transmitted to multimedia PC 11 over transmission path VOV1 directly (without MM card 3) to compression circuit 4. The compressed circuit has a signal processor that guarantees a high processing rate. The signal processor realizes the implemented decompression algorithm. Compression circuit 4 can be integrated with microcontroller 8 in an IC so that there is a common component. This makes possible an especially small and economical design of the audio player.

From the decompression circuit the decompressed data is supplied to a D/A converter 5. The latter is preferably a stereo D/A converter. The signals obtained at its output are supplied to playback unit 7. The latter consists of at least one amplifier 6 and a loudspeaker unit with preferably stereo loudspeakers 7.1, 7.2 and/or with stereo earphones.

It can be provided that microcontroller 8 interrupts the transmission of audio data upon the initiation of a process, e.g., "Forward" or "Back" by keyboard 10. This avoids an uncontrolled playback of data during this operation of the device.

If the interruption of the transmission of data is marked in memory 3 by setting a data marker then the position at which the interruption was made can be found again in a rapid and simple manner. This makes it possible to jump back and forth between several positions in the memory.

The described audio player can also be combined in the sense of a combined device in a unit with a CD player, DVD player or a similar device.

Data from traditional devices can be used in this instance to play the MM card. The MM card can subsequently be removed from the combined device and inserted into a portable audio player. It can be sufficient in this instance if the audio player in the combined device is designed only as a receiving device for playing the MM card. In a further development of the invention a coupling point of the audio player to a stationary CD player or similar playback device is provided. The audio player is coupled to the stationary device for receiving and/or playing back the MM cards. This can permit an improved playback of the data. The coupling takes place by a connection of the stationary device with microcontroller 8 and/or with the output of D/A converter 5.

It is particularly advantageous if the audio player is designed using an "embedded application". This avoids having to use an expensive bus structure which would increase, in particular, the cost of the device. This does limit the functionality since only the one functionality filed can be performed; however, this avoids an operating system like the one which would be necessary in a PC-like structure or a bus. In particular, this reduces the cost.

Further functions can be realized with the audio player by using a large graphics display. Thus, for example, played-back music can be graphically supported.

The audio player can be universally used by using a platform-independent programming language such as, e.g., JAVA. This makes it

possible for the decompression of the data on the card to take place independently of the product. A special embodiment of the audio player can provide that the MM card is introduced almost completely into the audio player. This avoids a damaging of the MM card. If the insertion into the audio player is closed with a slide, this assures that the MM card is protected from falling out or being contaminated. This can be especially important if the audio player is to be used in a rough environment. Since MM cards can be very small, this offers reliable protection against the loss of the MM card.

The invention is not limited to the exemplary embodiment described. Variations of the exemplary embodiment in the sense of the patent claims also fall under the scope of the invention.

CLAIMS:

1. An audio player with an interchangeable data carrier for audio data in which audio player (1) at least one microcontroller (8) with a connection to its own peripheral keyboard (10) is present, which has a data connection (VOV1) to a decompression circuit (4) and a data connection (VOV2) to an MM card (3) which can be inserted into a slot (2) of the player (1) and which MM card (3) has a data connection (V2V1) to the decompression circuit (4) whose output runs to a D/A converter (5) and in which the output of the D/A converter (5) is connected to a playback unit (7).

2. The audio player according to claim 1, characterized in that the audio player (1) comprises an interface (12), in particular a serial interface, for coupling to a data source, in particular to a computer or a data source (11) with a connection to the microcontroller (8).

3. The audio player according to one or several of the preceding claims, characterized in that the microcontroller (8) comprises ROM and/or RAM components.

4. The audio player according to one or several of the preceding claims, characterized in that the MM card (3) comprises a microprocessor or ASIC for data control and comprises a memory, in particular a flash memory or ROM.

5. The audio player according to one or several of the preceding claims, characterized in that the MM card (3) comprises a signal processor with program algorithms for converting text data into audio data.

6. The audio player according to one or several of the preceding claims, characterized in that the decompression circuit (4) comprises at least one signal processor and a serial high-speed interface to the MM card (3).

7. The audio player according to one or several of the preceding claims, characterized in that several slots (2) for MM cards (3) are arranged in the audio player.

8. The audio player according to one or several of the preceding claims, characterized in that a graphics display is arranged in the audio player.

9. The audio player according to one or several of the preceding claims, characterized in that the audio player is integrated and/or can be integrated in an audio playback device comprising another storage medium.

10. A method for controlling audio data by an audio player (1) in which the audio data for the audio player (1) is supplied by means of an interchangeable data carrier or via an interface (12), in particular a serial interface, and the supplied audio data is already compressed or becomes compressed, and in which the compressed audio data is transferred by a microcontroller (8) of the audio player (1) from a memory of a data source (11) into a memory of the MM card (3) and stored there and/or compressed audio data is transported directly or via the microcontroller (8) with a control

through [by] the microprocessor of the MM card (3) from the memory of the MM card (3) to a decompression circuit (4) and decompressed there and then supplied via a D/A converter (5) to a playback unit (7) and/or compressed audio data is transported from a memory of the data source (11) to the decompression circuit (4) and decompressed there and then supplied via the D/A converter (5) to the playback unit (7).

11. The method according to claim 10, characterized in that is compressed and/or becomes compressed in accordance with a standard, preferably MPEG II, layer 3.

12. The method according to one or several of the preceding claims, characterized in that the compressed audio data is selectively transmitted at different data transfer rates to the decompression circuit (4).

13. The method according to one or several of the preceding claims, characterized in that the data transfer rate is at least 92 kbit/s.

14. The method according to one or several of the preceding claims, characterized in that there is a random [optional] access to the memory of the MM card (3) via a keyboard (10) of the microcontroller (8) and that the transmission of audio data is interrupted in particular upon the initiation of a "Forward" or "Back" procedure by the keyboard (10).

15. The method according to one or several of the preceding claims, characterized in that the interruption of the transfer of data is marked in the memory by setting a data marker.

16. The method according to one or several of the preceding claims, characterized in that a signal processor is controlled in such a manner by program data from the MM card (3) through [by] the microcontroller (8) of the audio player (1) that text data stored on the MM card is converted into audio data,

17. The method according to one or several of the preceding claims, characterized in that a signal processor is controlled in such a manner by program data from the MM card (3) through [by] the microcontroller (8) of the audio player (1) that text data stored on the MM card is not converted into audio data but rather reproduced via the playback unit (7) on a display.

18. The method according to one or several of the preceding claims, characterized in that the text data stored on the MM card (3) is compressed.

19. The method according to one or several of the preceding claims, characterized in that a platform-independent programming language, in particular JAVA, is used as programming language.
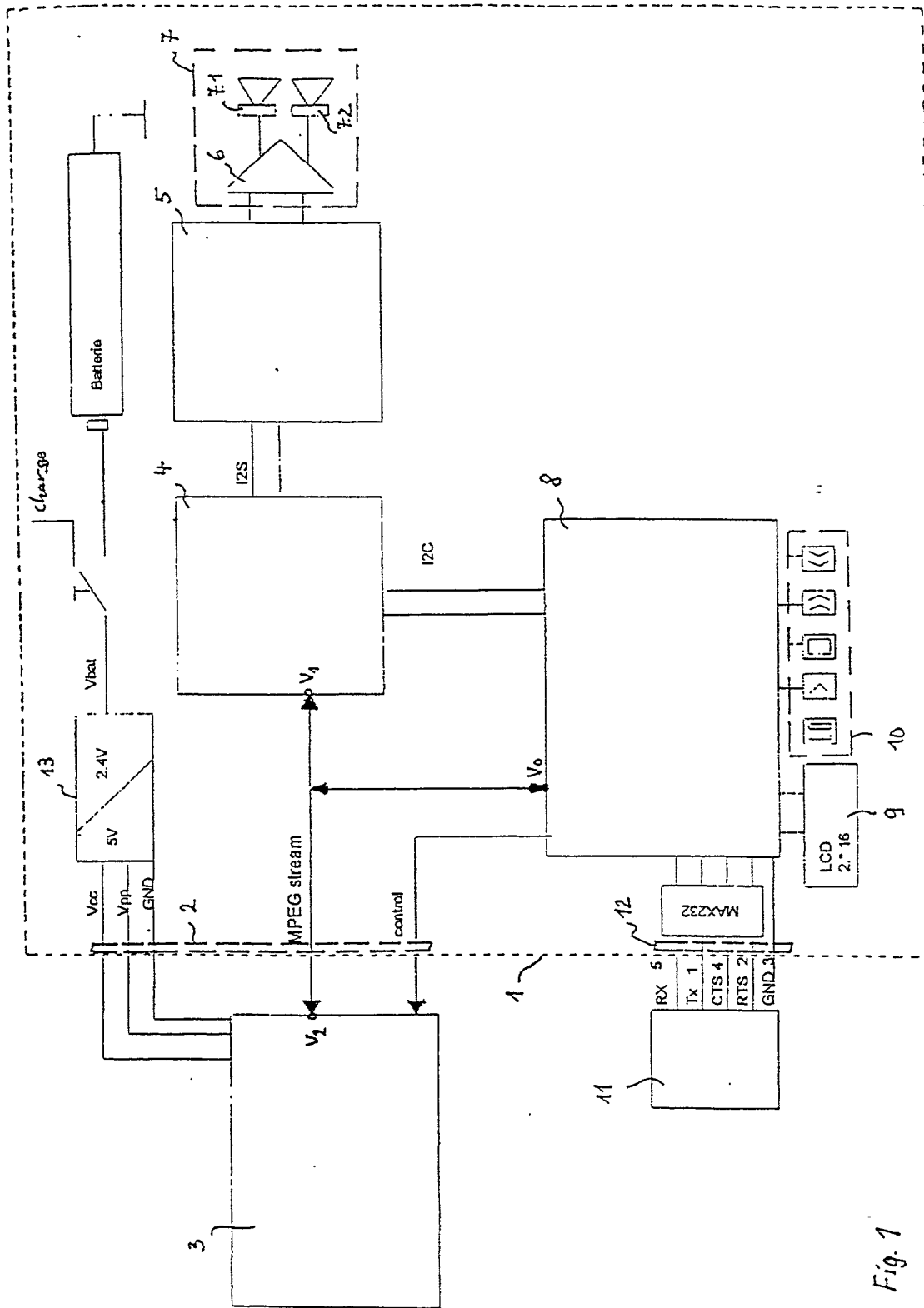
Fig. 1

**COMBINED DECLARATION FOR PATENT APPLICATION
AND POWER OF ATTORNEY**
(includes reference to PCT International Applications)

As a below named inventor, I hereby declare that:

My residence, post office address, and citizenship are as stated below next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

____AUDIO PLAYER AND A METHOD FOR CONTROLLING AUDIO DATA BY THE____

_____AUDIO PLAYER_____

the specification of which

    ( ) is attached hereto.

    (XX) was filed on _____March 22, 2000_____ as
             Application Serial No. _____09/509,297_____
             and was amended on _____.
                             (if applicable)

    (XX) was filed as PCT International Application
             No. __EP98/06022__ on __September 22, 1998__ and was
             amended under PCT Article 19 on _____.
                                 (If applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information known to me to be material to patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119 of any foreign application(s) for patent or inventor's certificate or of any PCT International Application(s) designating at least one country other than the United States of America listed below and have also identified below any foreign application for patent or inventor's certificate or any PCT International Application(s) designating at least one country other than the United States of America having a filing date before that of the application on which priority is claimed:

Prior Foreign/PCT Application(s)   <u>Priority Claimed</u>
(if PCT, indicate "PCT" under Country)

<u>197 41 503.2</u>   <u>Germany</u>   <u>22/09/97</u>   (X)   ( )
Number   Country   Day/Month/Year Filed Yes   No

<u>EP98/06022</u>   <u>PCT</u>   <u>22/09/98</u>   (X)   ( )
Number   Country   Day/Month/Year Filed Yes   No

I hereby claim the benefit under Title 35, United States Code
Section 120 of any United States application(s) or PCT Interna-
tional Application(s) designating the United States of America
listed below and, insofar as the subject matter of each of the
claims of this application is not disclosed in such prior appli-
cation(s) in the manner provided by the first paragraph of
Title 35, United States Code Section 112, I acknowledge the duty
to disclose all information known to me to be material to patent-
ability as defined in Title 37, Code of Federal Regulation,
Section 1.56, which became available between the filing date of
the prior application(s) and the national or PCT international
filing date of this application:

Application Serial No. or PCT Application No. (and any assigned USSN)	U.S. or PCT Filing Date	Status -- Patented Pending, or Abandoned
PCT/EP98/06022	22/09/98	Pending

POWER OF ATTORNEY: As a named Inventor, I hereby appoint the
following attorney(s) and/or agent(s) to prosecute this applica-
tion and transact all business in the Patent and Trademark Office
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Erich Böhm
(Full name of sole or first inventor)

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(Full name of third joint inventor, if any)

Third Inventor's Signature _____ _____
                                                    Date

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Citizenship: _____

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NOTE: For Additional Inventors, check _____ and attach sheet with same information and signature and date for each.